IT Unit 3

Topic 1

# Ch 1 Organisations & Data Management

**Characteristics of data types, p 22**

**Elaborate under each of the following data types:**

1. **Text, (string)** This type of field holds a mix of characters (letters, numbers, and sometimes special characters), which is limited to 255 characters. Names and Addresses are typically entered as string.
2. **Numeric – integer, floating point:** This field only allows numbers to be entered, often used when making calculations. These calculations can never be entered into a string field.
3. **Date:** A variation of a numeric field type. This value is normally based on the number of days since the “zero day”. Dates can be formatted to show a combination of years, months, weeks, days, hours, minutes and even seconds. These fields can display either a 12 or 24-hour clock.
4. **Character:** This is a text field which only allows a single character to be entered, such as “A, H, L, P”. This field is used to represent a large amount of data without using much space
5. **Boolean:** A field type which only allows a true/false answer. Such as a yes/no. This field typically already has been entered and can be often shown as a tick box on forms.

**Databases and database terminology, p 23**

1. **What is a database?** A database is an application able to handle a wide range of data, from personal secure details, to public results and information. A database typically includes tables, queries, reports and other objects to help the user.
2. **Explain the relationship between fields, records and tables.** A field is located within an individual record, which is located within a table. A table can have many records.
3. **Explain the purpose of the following objects in a database: forms, queries, reports & macros:** 
   1. **Forms:** A interface for users to enter and edit data.
   2. **Queries:** A query allows users to select a set of specific data based on a series of criteria. This helps makes links between a series of different data.
   3. **Reports:** A report formats the query data and allows you to add summery statistics, such as totals- as well as headings, to make the data and information easier to read and understand.
   4. **Macros:** A macro is an automatic task which can do things the user can do, ultimately saving time for the user.
4. **What is the purpose of SQL?** SQL is a domain-specific language used in programming and designed for managing data that is found within a database.
5. **Distinguish between a flat file and a relational database? What are the advantages of using a relational data base?** A flat file database includes tables, which consists of rows and columns. While a relational database is a much more secure and elaborate organisation of data. The advantages include such as a more secure protection of data, able to enter data quickly and more efficiently, and the usage of Macros.

**Relational databases, p 25**

1. **What does RDBMS refer to?** Relational Database Management System.
2. **Explain with eg.s the following different types of relationships between tables in a relational database.**
   1. **One-to-one relationship:** This is used when a record in one able is connected to only one record in a second table. As an example, an airlines passenger details table will contain the details for many passengers.
   2. **One-to-many relationship:** Indicates that one record in the first table can be connected to more than one record in a second table. Such as several workers in an office may share a single telephone extension. Each of this extension record is related to several employee records.
   3. **Many-to-many-relationship:** Is used when each record in the first table can be connected to several records in the second table. At the same time, each record in the second table may be related to many records in the first table. Such as a student detail table and a subject detail table may have a many-to-many relationship.
3. **What is meant by a foreign key?** When a primary key is used in another table, it is known as a foreign key.

**Creating an RDMS structure, p 26**

1. **Why is it important to consider how to structure the data in a database? What needs to be considered?** You need to consider the importance of entities; their characteristics need to be determined and you need to find if there have any problems occur. Data in a database needs to become information, it needs to be structured correctly
2. **What is the purpose of an entity relationship diagram? (go to p 28 to answer the following).** An ERD is used by Database designers to establish the interrelationships between different data element types. Once they have been determined and their attributes have been identified, an ERD is created to show how the entities relate to each other.
3. **What are entities, use an eg. from p 28, and how are they represented?** Entities are different data elements, they are furthermore represented by boxes.
4. **What are the attributes and how are they represented?** Attributes are the elements of data that we collect through entities- they are represented by attributes.
5. **How are relationships represented?** A relationship shows the connection between entities, they are represented by diamond shapes.
6. **What is the difference between the Chen and Bachman models of representing ERD’s?** Chen-Style ERD’s use boxes to represent entities, while diamonds are relationships and ovals for attributes. The Bachman Models show the entities and their attributes together in a box, while relationships are indicated by lines.